Remarks

Claims 331-376 are pending in this application.

In response to the restriction requirement, Applicants traverse the restriction as improperly made on the following grounds.

1. Applicants respond that the Patent Office has attempted to restrict the pending claims on the basis of 35 USC 121. Here is the first sentence of the language of that statute:

> "If two or more independent **and** distinct inventions are claimed in one application, the Director may require the application to be restricted to one of the inventions."(emphasis added).

In its restriction requirement the Patent Office has argued that "the inventions are distinct, each from the other because of the following reasons:…" Nowhere in that restriction requirement had the PTO ever mentioned any reason why the restricted inventions are independent, as required by the statute. If the words "independent" and "distinct" meant the same thing in 35 USC 121, then the statute would have one word "distinct", and not two different words. Since the Patent Office has not provided any reason as to why the distinct invention as restricted by the Office are independent within the meaning of the statute, the Office has not made a case for the restriction requirement. Applicants therefore traverse the restriction requirement and request that it be withdrawn.

2. The Patent Office wrote that Claims 350-359 are drawn to composition of matter having metal islands. Applicants reviewed those Claims and saw that independent Claims 350 and 354 are drawn to a sensor (an apparatus) having a first structure with a substrate with a plurality of metal islands on that substrate, the thickness of the film of the islands being no more than a certain thickness.
According to the US PTO (http://www.uspto.gov/web/offices/pac/doc/general/what.htm), "[T]he term 'composition of matter' relates to chemical compositions and may include mixtures of ingredients as well as new chemical compounds." Applicants respectfully ask the Patent Office to point out how exactly independent Claims 350 and 354 are drawn to

a composition of matter, for example, by referencing a chemical composition or an ingredient. Clearly, a thickness property is not a chemical ingredient. Applicants assert that both independent claims 350 and 354 with their respective dependent Claims are apparatus claims and should not be withdrawn from the rest of the Claims in the present application. For these reasons the restriction requirement has to be withdrawn.

In order to comply with the requirements in the Office Action, Applicants elect, under traverse, Claims 331-349- and 360-376 for examination and requests that Claims 350-359 be brought into examination after the withdrawal of the improperly made restriction requirement.

Claims 331-349 and 360-367 were rejected under 35 U.S.C. 102(a,b) over Bowen et al. (USP 4,802,761), Krull (USP 5,449,918) or JP 2003565587. This rejection is respectfully traversed for the following reasons.

It is well established that a claim is anticipated under 35 U.S.C. §102, only if each and every element of the claim is found in a single prior art reference[1]. Moreover, to anticipate a claim under 35 U.S.C. §102, a single source must contain each and every element of the claim "arranged as in the claim."[2] Missing elements may not be supplied by the knowledge of one skilled in the art or the disclosure of another reference[3]. If each and every element of a claim is not found in a single reference, there can be no anticipation.

On page 5 of the Office Action the Patent Office wrote with regard to the Bowen patent that "column 5 teaches Laser and monochromator are tuned in the range of 290-900 nm to create a Plasmon resonance phenomenon that is quantified by a detector."

Here is the quotation from the relevant portion of column 5 of the Bowen patent:

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[1] Veregal Bros. v Union Oil Co. of California, 814 F.2d 628, 631, 2USPQ2d 1051, 1053 (Fed. Cir. 1987).
[2] Structural Rubber Prods. Co. v. Park Rubber Co., 749 F.2d 707, 716, 223 U.S.P.Q. 1264, 1271 (Fed. Cir. 1984). Lewmar Marine Inc. v. Barient, Inc., 827 F.2d 744, 747, 3 U.S.P.Q. 2d 1766, 1768 (Fed. Cir. 1987), cert. denied, 484 U.S. 1007 (1988).
[3] Titanium Metals Corp. v. Banner, 778 F.2d 775, 780, 227 U.S.P.Q. 773, 777 (Fed. Cir. 1985).

> "The preferred embodiment of the invention utilizes a pulsed laser that is tuneable from 220 nm to 900 nm. The detection system is based on an image intensified diode array detector, with gated electronics, which is coupled to a computer which records the data and controls the instrument."

Further in Column 6, lines 46-52 of the Bowen patent it is written that:

> "A tunable laser is used to enhance the Raman, resonance Raman spectra or SERS or SERRS of each chemical substance in a mixture of components as each substance is being analyzed. The excitation wavelength is changed to correspond to the absorption envelope or plasmon-resonance envelope of the substance in question."

The Patent Office has also quoted Column 6, lines 55-65 of the Bowen patent as a support that they "teach algorithms [are] used to compare are sued to compare the spectra to quantitatively/qualitatively identify the analytes."

Here is what Column 6, lines 55-65 of the Bowen patent say:

> "Algorithms are provided to store and collect spectra and to produce chemical identification and qualitative and quantitative concentrations from any of the types of apparatus used for in situ analysis.
>
> The Raman and resonance Raman spectroscopy is used with optical fibers in combination with a chromatographic prefilter prior to intake of the sample cells or surface enhanced Raman spectroscopy. The chromatographic prefilter is used for gross separation by chemical properties, such as acids from bases, to facilitate the analysis of complex mixtures."

Upon reviewing the assertions of the Patent Office and the quoted excerpts of the Bowen patent, Applicants disagree with the Patent Office. The referenced excerpts have very little to do with the present invention as claimed in independent Claim 331, 343 and Claim 337. In particular, Claims 331, 343 and 337 are directed to detecting the change between the two intensities of the transmitted EM radiation that corresponds to the change in intensity of the two surface plasmons, wherein the change in the plasmon intensity is reflected in the change of the transmitted electromagnetic radiation. In other words, Claims 331, 343 and 337 are directed to measuring transmitted EM radiation corresponding to a first surface plasmon intensity, then forming a structururе, then measuring transmitted EM radiation corresponding to a second surface plasmon intensity

(with the formed structure), then using the change in the measurements of the EM radiation (corresponding to the change in intensity between the first and the second plasmons) to sense the binding of an analyte.

There is nothing in the Bowen patent disclosing two surface plasmons of different intensities. In fact, the whole Bowen patent mentions the word "plasmon" only three times: in Col. 4, line 38, Col. 6 line 51, and Col. 8 line 40. None of these three instances has anything to do with plasmons of different intensities. There is nothing in the Bowen patent that discloses the transmitted electromagnetic radiation which changes depending on the changes in the intensity of a surface plasmon. There is nothing in the Bowen patent that discloses sensing the binding of the analyte by measuring a change in the transmitted electromagnetic radiation caused by changes in intensity between different plasmons. This is what is claimed in independent Claim 1, and none of these elements are disclosed or suggested anywhere in the Bowen patent. The language "Algorithms are provided to store and collect spectra and to produce chemical identification and qualitative and quantitative concentrations…" from Col. 6, lines 55-65 of Bowman do not disclose anything with regard to the specific methods claimed in Claim 331, 343 and 337, as explained in this response.

If the Patent Office disagrees with the above-presented assertions of Applicants, then it is respectfully requested that the Patent Office cites the exact Column-line numbers in the Bowen patent where the following elements claimed in Claims 331, 343 and 337 can be found:

- first measurement of transmitted electromagnetic radiation corresponding to the intensity of the first surface plasmon;

- second measurement of transmitted electromagnetic radiation corresponding to the intensity of the second surface plasmon, the second measurement being take after forming the second structure;

- using the first and the second measurements of the transmitted electromagnetic radiation to sense the change in the intensity between the two plasmons, which is indicative of binding of the analyte.

Applicants asserts that no such disclosure can be found in the Bowen patent and that Claim 331 together with its dependent Claims 332-336, Claim 343 with its dependent Claims 344-349 and Claim 337 with its dependent Claims 338-342, comply with the requirements 35 U.S.C. 102(a,b) and should be allowed.

With regard to the cited Krull patent, Applicants assert that it also has nothing to do with the present invention as claimed in independent Claims 331, 343 and 337. That patent has to do with enhancing fluorescence from deposited fluorescent films on thin metal islands. In the Krull patent the fluorophore is the analyte, and the fluorescent signal from the fluorophore is enhanced when certain evanescent field associated with the excitation of the surface plasmon resonance in the metal film is created. In the Krull patent there is no disclosure of the electromagnetic field transmitted through a first structure or through a second structure. Therefore, the above-referenced elements of independent Claims 331, 343 and 337 are not disclosed in Krull, Therefore, the Krull patent cannot be an anticipating publication for the referenced independent Claims and their respective dependent Claims.

With regard to JP 20003565587, the Patent Office provided no explanation as to where exactly each and every element of independent Claims 331, 343 and 337 of the present invention is disclosed in that JP publication. The European search report referenced in the Office Action related to the previous version of the Claims pending in the European application at the time that search was performed. The claims as presently pending in the US application have been redrafted and now differ from the earlier EPO claim set. Unless the Patent Office specifically explains which lines in which paragraphs of that JP publication disclose each and every element of the invention as presently claimed, the 35 USC 102 rejection should be withdrawn as improperly made.

Moreover, since the earliest US filing date of the present application is February 26, 2001, it means that the December 26, 2000 publication date of the JP publication is not outside the one-year grace period under 35 USC 102(b). Therefore, that JP publication cannot even be cited against the present claims as a 102(b) citation.

Claims 368-376 were rejected under 35 U.S.C. 103(a) over Bowen et al. (USP 4,802,761), Krull (USP 5,449,918) or JP 2003565587. This rejection is respectfully traversed for the following reasons.

For an obviousness rejection to be proper, the Patent Office must meet the burden of establishing a prima facie case of obviousness. The Patent Office must meet the burden of establishing that all elements of the invention are disclosed in the cited publications, which must have a suggestion, teaching or motivation for one of ordinary skill in the art to modify a reference or combined references[4]. The cited publications should explicitly provide a reasonable expectation of success, determined from the position of one of ordinary skill in the art at the time the invention was made[5].

Applicants point out that, similarly to their arguments presented above, the Bowen patent (as well as the Krull patent and the JP publication) has no disclosure of a detector detecting a spectral change in the electromagnetic radiation transmitted through the sensor itself, wherein the change in the sensed transmitted electromagnetic radiation correlates with a change in the surface plasmon intensity occurring in the metal islands, as claimed in independent Claim 368. Nothing about the change in the plasmon intensity and the change in the transmitted electromagnetic signal induced by the change in the plasmon intensity is disclosed in the Bowen and Krull patents or in the cited JP publication. The disclosures of those publications have nothing to do with detecting a change in the transmitted EM radiation signal caused by the change in the intensity of the surface plasmons in the metal films. There is simply no such subject matter in those cited publications. Once again, if the Patent Office disagrees, it is respectfully asked to

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[4] *In re Sang Su Lee, 277 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002).*
[5] *In re Fine, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); In re Wilson, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).*

specifically cite the line or paragraph numbers where such disclosure can be found. Since the cited publications do not even hint to each and every element of the invention as claimed in independent Claim 368, therefore, the rejection under 35 USC 103 was improperly made and should be withdrawn. Claim 368 and its dependent Claims 369-376 should be allowed.

It is believed that the present application is in condition for allowance. A Notice of Allowance is respectfully solicited. Should any questions arise, the Examiner is encouraged to contact the undersigned.

Respectfully submitted,

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